

WHAT IS CLAIMED IS:

1. A computer system, comprising:

5 one or more devices configured to assert a voltage request;

an arbiter configured to receive a plurality of voltage requests asserted by a plurality of the one or more devices, to choose a chosen voltage request and to output the chosen voltage request to one or more power supplies;
10 and

the one or more power supplies, wherein each of the one or more power supplies is configured to receive the chosen voltage request and to provide a chosen voltage that corresponds to the chosen voltage request to one or more of
15 the one or more devices.

2. The computer system of claim 1, wherein the one or more devices comprise a processor.

20 3. The computer system of claim 1, wherein each of the voltage requests comprises a voltage identification (VID) code.

4. The computer system of claim 1, wherein if only one device in the computer system is configured to assert a voltage request, the arbiter is further configured to choose
25 that one device's voltage request.

5. The computer system of claim 1, wherein the arbiter is further configured to choose a highest voltage request from the plurality of voltage requests received by the arbiter.
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6. The computer system of claim 1, wherein the arbiter is further configured to receive a first low power signal indicative of whether the one or more devices should be in a first low power state.

5 7. The computer system of claim 6, wherein the arbiter is further configured to choose a first low power voltage request corresponding to a first low power state if the first low power signal indicates that the devices should be in the first low power state.

8. The computer system of claim 6, wherein the arbiter is further configured to
10 receive a second low power signal indicative of whether the one or more devices should be in a second low power state.

9. The computer system of claim 1, wherein the arbiter is further configured to receive one or more power supply signals indicative of whether the one or more power
15 supplies are functioning properly.

10. The computer system of claim 9, wherein the arbiter is further configured to choose a low power voltage request corresponding to a low power state if any of the power supply signals indicate that any of the power supplies are not functioning properly.
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11. The computer system of claim 1, wherein the arbiter is further configured to receive a plurality of device present signals indicative of whether the one or more devices are present in the computer system.

25 12. The computer system of claim 11, wherein the arbiter is further configured to choose a low power voltage request corresponding to a low power state if the plurality of device present signals indicate that none of the devices are present.

13. The computer system of claim 11, wherein the arbiter is further configured to
30 choose a first voltage request asserted by a first device if the plurality of device present

signals indicate that the first device is the only one of the devices present in the computer system.

14. The computer system of claim 1, wherein the one or more power supplies
5 comprises one or more voltage regulators.

15. The computer system of claim 14, wherein the one or more voltage regulators
comprises one or more voltage regulator modules configured to receive a VID code as an
input and to provide a corresponding voltage in response to receiving the VID code.

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16. The computer system of claim 1, wherein the arbiter comprises a programmable
logic device (PLD) configured to receive the plurality of voltage requests, to choose the
chosen voltage request and to output the chosen voltage request.

15 17. A method for arbitrating one or more voltage requests in a computer system,
comprising:

asserting the one or more voltage requests from one or more devices each
configured to receive a voltage;

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receiving the one or more voltage requests;

choosing a chosen voltage request;

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outputting the chosen voltage request to one or more voltage regulators;

providing a chosen voltage to the one or more devices from the one or more
voltage regulators, wherein the chosen voltage corresponds to the chosen
voltage request.

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18. The method of claim 17, wherein the one or more devices comprise a processor.
19. The method of claim 17, wherein each of the voltage requests comprises a VID code.
- 5 20. The method of claim 17, wherein if only one device in the computer system is configured to assert a voltage request, said choosing comprises choosing that device's voltage request.
- 10 21. The method of claim 17, wherein said choosing further comprises choosing a highest voltage request from the one or more voltage requests received.
22. The method of claim 17, further comprising receiving a first low power signal indicative of whether the one or more devices should be in a first low power state.
- 15 23. The method of claim 22, wherein said choosing further comprises choosing a first low power voltage request corresponding to the first low power state if the first low power signal indicates that the devices should be in the first low power state.
- 20 24. The method of claim 22, further comprising receiving a second low power signal indicative of whether the one or more devices should be in a second low power state.
- 25 25. The method of claim 17, further comprising receiving one or more voltage regulator signals indicative of whether the one or more voltage regulators are functioning properly.
26. The method of claim 25, wherein said choosing further comprises choosing a low power voltage request corresponding to a low power state if any of the voltage regulator signals indicate that any of the voltage regulators are not functioning properly.
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27. The method of claim 17, further comprising receiving a plurality of device present signals indicative of whether the one or more devices are present in the computer system.

28. The method of claim 27, wherein said choosing further comprises choosing a low power voltage request corresponding to a low power state if the plurality of device present signals indicate that none of the devices are present.

29. The method of claim 27, wherein said choosing further comprises choosing a first voltage request asserted by a first device if the plurality of device present signals indicate that the first device is the only one of the devices present in the computer system.

30. A voltage request arbiter, comprising:

an input stage configured to receive a plurality of voltage requests from a plurality of devices; and

an arbitration stage configured to choose a chosen voltage request; and

an output stage configured to assert a chosen voltage request to one or more voltage regulators that provide one or more of the devices with a chosen voltage specified by the chosen voltage request.

31. The voltage request arbiter of claim 30, wherein each of the voltage requests comprises a VID code.

32. The voltage request arbiter of claim 30, wherein the arbitration stage is further configured to choose a highest voltage request from the voltage requests from the devices.

33. The voltage request arbiter of claim 30, wherein the input stage is further configured to receive a first low power signal indicative of whether the devices should be in a first low power state.

5 34. The voltage request arbiter of claim 33, wherein the arbitration stage is further configured to choose a first low power voltage request corresponding to a first low power state if the first low power signal indicates that the devices should be in the first low power state.

10 35. The voltage request arbiter of claim 33, wherein the input stage is further configured to receive a second low power signal indicative of whether the devices should be in a second low power state.

15 36. The voltage request arbiter of claim 30, wherein the input stage is further configured to receive one or more voltage regulator signals indicative of whether the one or more voltage regulators are functioning properly.

20 37. The voltage request arbiter of claim 36, wherein the arbitration stage is further configured to choose a low power voltage request corresponding to a low power state if any of the voltage regulator signals indicates that any of the voltage regulators are not functioning properly.

25 38. The voltage request arbiter of claim 30, wherein the input stage is further configured to receive a plurality of device present signals indicative of whether the plurality of devices is present.

30 39. The voltage request arbiter of claim 38, wherein the arbitration stage is further configured to choose a low power voltage request corresponding to a low power state if the plurality of device present signals indicate that none of the devices are present.

40. The voltage request arbiter of claim 38, wherein the arbitration stage is further configured to choose a first voltage request from a first device if the plurality of device present signals indicate that the first device is the only one of the devices present.